

I. Amendments To The Claims

Claims 1-31 (canceled)

Claim 32 (previously amended) An antibody of predetermined specificity obtained by a method comprising the steps of:

(a) synthesizing a V_H -coding gene library containing a plurality of different V_H -coding DNA sequences by a method comprising the steps:

(i) preparing a polynucleotide containing composition, wherein at least a portion of the polynucleotides in said composition comprise a plurality of different V_H -coding sequences,

(ii) amplifying said plurality of V_H -coding sequences in said polynucleotide containing composition;

(b) synthesizing a V_L -coding gene library containing a plurality of different V_L -coding DNA sequences by a method comprising the steps:

(i) preparing a polynucleotide containing composition, wherein at least a portion of the polynucleotides in said composition comprise a plurality of different V_L -coding sequences,

(ii) amplifying said plurality of V_L -coding sequences in said polynucleotide containing composition;

(c) joining in operable combination V_H -coding sequences from said V_H -coding gene library with V_L -coding sequences from said V_L -coding gene library into expression vectors as to be able to coexpress a V_H -coding sequence and a V_L -coding sequence from each vector, whereby a diverse library is formed;

(d) selecting and isolating from said diverse library at least one coexpression vector capable of producing polypeptides having the desired specificity;

(e) transforming a host cell with said expression vector; and

(f) isolating an antibody encoded by said vector from said host cell.

Claim 33 (previously added) The antibody according to Claim 32, wherein said antibody is a catalytic antibody.

Claim 34 (previously amended) An antibody of predetermined specificity obtained by a method comprising the steps of:

(a) preparing a first polynucleotide containing composition, wherein at least a portion of the polynucleotides in said first polynucleotide containing composition comprise a plurality of V_H-coding sequences;

(b) amplifying said plurality of V_H-coding sequences from said first polynucleotide containing composition by a method of amplification comprising the steps of adding primer sequences capable of hybridizing upstream and downstream from a plurality of said V_H-coding sequences under conditions permitting hybridization to occur, whereby a plurality of amplified V_H-coding sequences are produced and said amplified V_H-coding sequences form a V_H-coding library;

(c) preparing a second polynucleotide containing composition, wherein at least a portion of the polynucleotides in said second polynucleotide containing composition comprise a plurality of V_L-coding sequences;

(d) amplifying said plurality of V_L-coding sequences from said second polynucleotide containing composition by a method of amplification comprising the step of adding primer sequences capable of hybridizing upstream and downstream from a plurality of said V_L-coding sequences under conditions permitting hybridization to occur, whereby a plurality of amplified V_L-coding sequences are produced and said amplified V_L-coding sequences form a V_L-coding library;

(e) joining in operable combination V_H-coding sequences from said V_H-coding library with V_L-coding sequences from said V_L-coding library into expression vectors so as to be able to coexpress a V_H-coding sequence and a V_L-coding sequence from each vector, whereby a diverse library is formed;

(f) selecting and isolating from said diverse library at least one coexpression vector capable of producing antibodies having the desired specificity;

(g) transforming a host cell with said expression vector; and

(h) isolating an antibody encoded by said vector from said host cell.

Claim 35 (previously added) The antibody according to Claim 34, wherein said antibody is a catalytic antibody.

Claim 36 (previously amended) An antibody of predetermined specificity obtained by a method comprising the steps of:

(a) producing a V_H-coding library and a V_L-coding library, by a method comprising the steps of:

(i) adding a first primer, wherein said first primer is capable of hybridizing to a first conserved nucleotide sequence substantially adjacent to a plurality of V_H-coding and V_L-coding sequences, and said coding sequences are present in a polynucleotide containing composition that comprises a plurality of different V_H-coding sequences and V_L-coding sequences,

(ii) adding a second primer to said nucleotide containing composition, wherein said second primer is capable of hybridizing to a second conserved nucleotide sequence substantially adjacent to a plurality of V_H-coding and V_L-coding sequences and said second conserved nucleotide sequence is not adjacent to said first conserved nucleotide sequence;

(b) joining in operable combination V_H-coding sequences from said V_H-coding gene library with V_L-coding sequences from said V_L-coding gene library into expression vectors so as to be able to coexpress a V_H-coding sequence and a V_L-coding sequence from each vector, whereby a diverse library is formed;

(c) selecting and isolating from said diverse library at least one coexpression vector capable of producing polypeptides having the desired specificity;

(d) transforming a host cell with said expression vector; and

(e) isolating an antibody encoded by said vector from said host cell.

Claim 37 (previously added) The antibody according to Claim 36, wherein said antibody is a catalytic antibody.

Claim 38 (previously amended) An antibody comprising a V_H domain and a V_L domain, which domains are obtained from a genetic library which encodes a plurality of diverse V_H and V_L encoding sequences joined in operable combination and formed by random combination of cloned V_H encoding sequences carried by a prokaryotic replicon and V_L encoding sequences carried by a prokaryotic replicon.

Claim 39 (previously added) The antibody of Claim 38, wherein said genetic library comprises at least 10,000 diverse V_H and V_L encoding sequences joined in operable combination.

Claims 40-42 (canceled)

Claim 43 (previously amended) An antibody obtained by a method comprising the steps of:

- (a) providing a genetic library comprising a plurality of diverse V_H and V_L encoding sequences in which each member of the library has a V_H and a V_L encoding sequence joined in an operable combination;
- (b) screening said library with an antigen; and
- (c) selecting an antibody capable of binding said antigen.

Claim 44 (canceled)

Claim 45 (new) An antibody to an antigen, obtained by a method comprising the steps of:

- (a) producing a V_H -coding library and a V_L -coding library, by a method comprising:
 - (i) providing a polynucleotide containing composition that comprises a plurality of different V_H -coding sequences and V_L -coding sequences;
 - (ii) adding to said composition a first V_H primer and a first V_L primer wherein said first primers are capable of hybridizing to first conserved nucleotide sequences substantially adjacent to a plurality of V_H -coding and V_L -coding sequences respectively present in said composition, and a second V_H primer and a second V_L primer wherein said second primers are capable of hybridizing to second conserved nucleotide sequences downstream of and on the complementary strand to said first conserved nucleotide sequences respectively; and
 - (iii) amplifying V_H -coding and V_L -coding sequences to obtain a V_H -coding and V_L -coding library;
- (b) ligating V_H -coding sequences from said V_H -coding library and V_L -coding sequences from said V_L -coding library into expression vectors;
- (c) transforming a host cell with said expression vectors so that an antibody is produced by coexpression of a V_H -coding sequence from said V_H -coding library and a V_L -coding sequence from said V_L -coding library, either on the same or different expression vectors; and

(d) isolating an antigen produced by said host cell and testing the specificity of the antibody for said antigen.

Claim 46 (new) An antibody according to claim 45, wherein the source of said plurality of V_H-coding and V_L-coding sequences is rearranged B cells collected from an animal immunized with said antigen.